

Topics in the call 2024

Hydrogen End Uses: Transport Applications

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Hydrogen End Uses: Transport Applications Overview



Main Focus

- Maritime and Heavy-Duty (with spill over to other applications);
- Balance of Plant (BoP design, architectures and operational strategies);
- Integration and demonstration for maritime application;



What is new

- Scale up of BoP components
- New storage solutions for maritime applications;
- Synergy between topics of the same call and existing projects (StaSHH)

Transport Applications Overview

Topic	Type of Action	Ind. Budget (M€)
HORIZON-JTI-CLEANH2-2024-03-01: Balance of plant components, architectures and operation strategies for improved PEMFC system efficiency and lifetime	RIA	4
HORIZON-JTI-CLEANH2-2024-03-02: Scaling-up Balance of Plant components for efficient high-power heavy-duty applications	RIA	4
HORIZON-JTI-CLEANH2-2024-03-03: Next generation on-board storage solutions for hydrogen-powered maritime applications	RIA	5
HORIZON-JTI-CLEANH2-2024-03-04: Demonstration of hydrogen fuel cell-powered inland or short sea shipping	IA	6

Transport Applications - Topics

HORIZON-JTI-CLEANH2-2024-03-01: Balance of plant components, architectures and operation strategies for improved PEMFC system efficiency and lifetime



Developing new operational strategies and architectures (TRL 3 → TRL 5)



- Improve system performance and lifetime.
- Validation on at least one module for a heavy-duty-road case and demonstrated applicability for a different transport mode.
- Range of applicability: heavy-duty road applications, within the boundaries of STaSHH project definitions.

HORIZON-JTI-CLEANH2-2024-03-02: Scaling-up Balance of Plant components for efficient high-power heavy-duty applications



Focus on higher power output and durability (TRL 3 → TRL 5)



- Development, testing and validation of high-power BoP components sized for $\geq 250\text{kW}$ PEM FC systems.
- BoP components of interest: air humidifiers, anode gas recirculation, gas sensors, etc etc.
- Specific Power and Durability KPIs depending on application field (maritime, aviation, road).
- Liaison with successful proposal form the topic CLEANH2-2024-03-01 is expected.

Transport Applications - Topics

HORIZON-JTI-CLEANH2-2024-03-03: Next generation on-board storage solutions for hydrogen-powered maritime applications

 New solutions for optimal storage of hydrogen or hydrogen carriers below the deck (TRL 4 → TRL 6)

- Focus on below-deck inland and sea waterborne storage system (CH₂, LH₂, NH₃, LOHC, or solid-state carriers)
- Complete infrastructure for refueling/bunkering should be described; tank-swapping are excluded.
- Supply of pure hydrogen to the propulsion system of a minimum power of 500kW, with minimum supply flow of 30kgH₂/h.

HORIZON-JTI-CLEANH2-2024-03-04: Demonstration of hydrogen fuel cell-powered inland or short sea shipping

 Demonstration of entire H₂ maritime ecosystem (TRL 5 → TRL 7)

- Development and demonstration of H₂ ecosystem with at least one port including H₂ logistics and refuelling/bunkering solution.
- Integration of FC powertrain and storage solution onboard on a suitable ship segment.
- Minimal on-board energy storage for operational autonomy of 48h and min. 1000h of operation of vessel under real use conditions.
- Synergies with ongoing and former projects such as FLAGSHIPS, H2Ports, RH2IWER, etc. is expected.

Questions?
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